DIABASE GLADE

Concept: Diabase Glade is an extremely rare, naturally open, patchy glade community of shallow soils over Piedmont mafic rock outcrops, containing a diverse herbaceous flora that combines species of granitic flatrocks and of mafic and ultramafic rock communities.

Distinguishing Features: The Diabase Glade type is distinguished from all other open glade and rock outcrop communities by having a flora that combines high abundance of rock outcrop species, including granitic flatrock species such as *Portulaca smallii*, *Cyperus granitophilus*, and *Isoetes piedmontana* with a large number of obligate base-loving species such as *Ruellia humilis, Berberis canadensis, Symphoricarpos orbiculatus, Matelea decipiens, Lithospermum canescens* and *Clematis ochroleuca*. The prairie-like Xeric Hardpan Forest subtypes and other basic woodlands have little area with open rock and lack this component of the flora.

Synonyms: *Sporobolus vaginiflorus var. ozarkanus - Diodia teres - Croton willdenowii - Ruellia humilis* Herbaceous Vegetation (CEGL004276).
Ecological Systems: Piedmont Hardpan Woodland and Forest (CES202.268).

Sites: Diabase Glades occur on flat upland sites with mafic bedrock beneath a shallow soil and with small, patchy, flatrock-like outcrops. The rock in both of North Carolina's examples is diabase, but one in South Carolina occurs on gabbro.

Soils: Soils are heterogeneous but generally shallow. Deeper pockets may exist in fractures. The soil contains abundant fine gravel-size nodules of manganese, and these cover the surface of some of the open bedrock patches. The pH is circumneutral and base saturation is high.

Hydrology: Diabase Glades are xeric because of the shallow soil, but water may pool locally for brief periods after rains.

Vegetation: The vegetation is a fine-scale mosaic of scrubby tree-patches, dense herbaceous cover, and moderate-to-sparse vegetation over rock. Woody patches are dominated by *Juniperus virginiana*, with *Quercus stellata, Ulmus alata,* or *Fraxinus biltmoreana* sometimes codominant. The most abundant shrubs include *Rhus aromatica*, *Symphoricarpos orbiculatus,* and *Rosa carolina,* but *Berberis canadensis* is sometimes present. Abundant herbs in the open areas include *Hexasepalum (Diodia) teres, Tragia urticifolia, Chamaecrista nictitans* var. *nictitans, Dichanthelium boscii, Dichanthelium sphaerocarpon, Euphorbia corollate, Helianthus divericatus, Oenothera fruticosa* var. *fruticosa*, *Panicum dichotomiflorum* var. *dichotomiflorum*, *Verbena simplex, Lolium arundinaceum, Carex muhlenbergii* var. *muhlenbergii*, *Croton wildenowii, Galactia volubilis* var. *volubilis, Lespedeza repens, Polypremum procumbens,* and *Scleria pauciflora*. Species shared with Granitic Flatrock also include *Portulaca smallii, Cyperus granitophilus,* and *Isoetes piedmontana*. Species shared with Xeric Hardpan Forest (Northern Prairie Barren Subtype) also include *Liatris squarrulosa, Lithospermum canescens, Matelea decipens, Packera paupercula* var *paupercula, Parthenium auriculatum, Ruellia humilis, Ruellia purshiana, Scutellaria nervosa, Symphyotrihum depauperatum,* and *Trichostema brachiatum*. Among the high diversity of additional herbaceous species are *Commelina virginica, Asclepias verticillata, Eragrostis spectabilis, Erigeron strigosus, Polygala verticillata,*

Rhynchosia tomentosa, Scleria ciliata, Stylosanthes biflora, Sisyrinchium angustifolium, Symphyotrichum pilosum, Symphyotrichum undulatum, Scleria oligantha, Scutellaria integrifolia, Andropogon ternarius, and *Manfreda virginica*.

Range and Abundance: Ranked G1. North Carolina has only two known examples, both near the town of Butner in Granville County. One occurrence is known in South Carolina, close to Mecklenburg County.

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Associations and Patterns: Diabase Glades are associated with forest communities of mafic rock areas, including Xeric Hardpan Forest and Dry Basic Oak–Hickory Forest.

Variation: The few known occurrences are locally heterogeneous on a fine scale.

Dynamics: Diabase Glades are maintained primarily by shallow soil. As in other glade communities, drought may be important in maintaining the open vegetation in the long term by killing established trees as well as limiting seedling establishment. The importance of fire is uncertain. Some component species are shared with frequently burned communities but at least a few are not. The irregular and heterogeneous vegetation would not carry fire well, but edges and denser vegetation patches could burn. Given the stressful site, even infrequent or mild fire may have significant effects.

Comments: Much of the area of the Diabase Glades is in shrub and tree patches. The NVC write-up for this association suggests that a separate association (*Juniperus virginiana - Ulmus alata - Fraxinus americana - Carya glabra* Forest) was intended for the woody component, but that association was not added to the NVC. Given the close association and complex intermixture of herbaceous and woody patches in the few known examples, no subdivision seems necessary.

Rare species:
Vascular plants: *Berberis canadensis, Cyperus granitophilus, Dichanthelium bicknellii, Isoetes piedmontana, Liatris squarrulosa, Lithospermum canescens, Matelea decipens, Nabalus albus, Packera paupercula* var *paupercula, Parthenium auriculatum, Phemerathus piedmontanus, Portulaca smallii, Ruellia humilis, Ruellia purshiana, Scutellaria nervosa, Symphyotrichum depauperatum,* and *Trichostema brachiatum*.

References:
LeGrand, H.E., Jr. 1988. Cedar glades on diabase outcrops: a newly described community type. Castanea 53: 168-172.

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